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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

CHEN, XIAOLIANG

ART UNIT

PAPER NUMBER

2841

MAIL DATE

DELIVERY MODE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/588,556

Applicant(s)

DEURINGER ET AL.

Examiner

XIAOLIANG CHEN

Art Unit

2841

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 June 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,4,5,7-15,18,19 and 21-28 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,4,5,7-15,18,19 and 21-28 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/808)
Paper No(s)/Mail Date 08-04-06
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Amendment

1. Acknowledgement is made of Amendment filed 06-18-09.
2. Claims 1, 14, 15 and 21 are amended.
3. Claims 2, 3, 6, 16, 17 and 20 are canceled.

Response to Arguments

4. Applicant's arguments with respect to claims 1 and 15 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1, 4, 5, 7, 15, 18, 19 and 21 are rejected under 35 U.S.C. 102(b) as being anticipated by Marian (US5913688).

Re Claim 1, Marian show and disclose

A housing (36, fig. 2) having a liquid-tight electric bushing (using a printed circuit board 34 to produce an electric bushing for the housing, fig. 2, the housing

including an opening, the housing adapted for sealing with the printed wiring board [claim 1]) comprising:

an opening in the housing (opening of 36, fig. 2); and

a printed circuit board (34, fig. 2) mounted to the housing and having at least first and second layers (73 and 70, fig. 2 and fig. 5), the at least first and second layers being configured without a continuous opening (fig. 2 and fig. 5) such that the printed circuit board is a liquid-tight closure (the housing adapted for sealing with the printed wiring board [claim 1]) that prevents a liquid from flowing into the opening (to prevent fluids from entering the region protected by the housing [Abstract]), the first layer being top side of the printed circuit board that spans the opening (fig. 2) and the second layer being a conductor track (conductive trace 70) in the interior of the printed circuit board (fig. 2 and fig. 5),

wherein a first contact element (72, fig. 2 and fig. 5) is disposed on the top side and in a bore through the first layer (a hole through 73, fig. 5) that extends to at least the second layer (70, fig. 5).

Re Claim 15, Marian show and disclose

A method of using a printed circuit board (34, fig. 2) to close an opening (opening of 36, fig. 2) provided in a housing (36, fig. 2) and as an electric bushing (using the printed circuit board to produce an electric bushing for the housing, fig. 2, the housing including an opening, the housing adapted for sealing with the printed wiring board [claim 1]) comprising:

mounting the printed circuit board (34, fig. 2) comprising a first layer (73, fig. 2 and fig. 5) on the housing, the printed circuit board having no continuous opening (fig. 2 and fig. 5) such that the printed circuit board is a liquid-tight closure (the housing adapted for sealing with the printed wiring board [claim 1]) that prevents a liquid from flowing into the opening wherein the first layer spans the opening and is the top side of the printed circuit board (fig. 2), and

disposing a first contact element (72, fig. 2 and fig. 5) on the top side and through a bore (a hole through 73, fig. 5) in the top side, wherein the bore extends to at least a second layer (70, fig. 2 and fig. 5) formed in the printed circuit board as a conductor track (conductive trace, fig. 5).

Re Claims 4 and 18, Marian show and disclose

According to claims 1 and 15 respectively, wherein the first layer is an electrical insulation material (dielectric layer, [col. 8, line 2]).

Re Claims 5 and 19, Marian show and disclose

According to claims 1 and 15 respectively, wherein the first contact element is coupled to a second contact element (68, fig. 5) via the second layer.

Re Claims 7 and 21, Marian show and disclose

According to claims 1 and 15 respectively, wherein the second contact element is on an underside (bottom) that is opposite the top side (fig. 5).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

9. Claims 8, 12, 22 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Marian in view of Rockwood et al. (US6316768).

Re Claims 8 and 22, Marian show and disclose

According to claims 5 and 19 respectively,

Marian does not disclose

wherein the second contact element extends to an outside an edge of the printed circuit board.

Rockwood et al. teaches a device wherein

the second contact element extends to an outside an edge of the printed circuit board (extension part of 102, extends to outside the side edge of the printed circuit board, fig. 8).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the contact element extends to outside of the edge of the printed circuit board as taught by Rockwood et al in the printed circuit board of Marian. in order to able to electrically couple from inside sealed chamber 92, 94 to outside (Rockwood et al., Para. [col. 13, line 37]), and also be able to electrically couple the electrical device 106 inside the sealed chamber to the outside of the electronic device (Rockwood et al., Para. [col. 13, line 46]).

Re Claims 12 and 26, Marian show and disclose

According to claims 1 and 15 respectively,

Marian does not disclose

wherein a seal is disposed between the printed circuit board and the housing.

Rockwood et al. teaches a device wherein

a seal (O-ring 96, fig. 8) is disposed between the printed circuit board and the housing.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the O-ring as taught by Rockwood

et al. in the electronic device of Marian, in order to able to get a better sealing between the printed circuit board and the house of the chamber.

10. Claims 9-11 and 23-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Marian in view of Powell (US6931723).

Re Claims 9-10 and 23-24, Marian show and disclose

According to claims 1 and 15 respectively,

Marian does not disclose

wherein the printed circuit board is flexible comprises a plurality of second layers, located one above the other,

Powell teaches a device wherein

wherein the printed circuit board is flexible (flexible circuit [col. 4, line 51]) comprises a plurality of second layers (interior conductive layers 5, fig. 8 and fig. 11), located one above the other (fig. 11),

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the flexible circuit board with the plurality of interior conductive layers as taught by Powell in the electronic device of Marian, in order to seal the opening of the electronic device more tightly and be able to make more electrical connections for the electronic device.

Re Claims 11 and 25, Marian show and disclose

According to claims 5 and 24 respectively, the first contact element and the second contact element are coupled via a conductor track (70, fig. 5),
Marian does not disclose

the first contact element and the second contact element are coupled via a plurality of conductor tracks, which are located one above the other and electrically coupled;

Powell teaches a device wherein

the first contact element and the second contact element are coupled via a plurality of conductor tracks (interior conductive layers 5, fig. 8 and fig. 11), which are located one above the other and electrically coupled (fig. 5);

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the plurality of interior conductive layers as taught by Powell in the electronic device of Marian, in order to be able to make more electrical connections for the electronic device.

11. Claims 13 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Marian in view of Rockwood et al. and Tilton et al. (US6108201).

Re Claims 13 and 27, Marian and Rockwood et al. disclose

According to claims 12 and 26 respectively,

Marian and Rockwood et al. do not disclose

wherein a pressure plate contacts the underside of the printed circuit board and presses the printed circuit board against the seal.

Tilton et al. teaches a device wherein

a pressure plate (508, fig. 5) contacts the underside of the printed circuit board and presses the printed circuit board against the seal.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the pressure plate as taught by Tilton et al. in the electronic device of Marian, in order to be able to reinforce and protect the printed circuit board in the electronic device.

12. Claims 14 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Marian in view of Kaczmarek et al. (US6542577).

Re Claims 14 and 28, Marian show and disclose

According to claims 1 and 15 respectively,

Marian does not disclose

the housing comprises an X-ray tube.

Kaczmarek et al. teaches a device wherein

the housing comprises an X-ray tube (14, fig. 1).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to seal the housing of the X-ray tube of Kaczmarek et al. as in the housing of electronic device of Marian, in order to make a hermetically sealed stator cord for x-ray tube applications (Kaczmarek et al., [Title]), and provide a seal which resists leakage of cooling oil from the housing (Kaczmarek et al., [Abstract]).

Conclusion

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. US-7092031 US-6138674.

14. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to XIAOLIANG CHEN whose telephone number is (571)272-9079. The examiner can normally be reached on 7:00-5:00 (EST), Monday-Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dean Reichard can be reached on 571-272-2800, ext 31. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Dean A. Reichard/
Supervisory Patent Examiner, Art Unit 2841

Xiaoliang Chen
Examiner
Art Unit 2841